this?

407. MR GRIFFITHS: I wish that we could go to the costs of the Channel Tunnel tunes, and clearly we can't because they haven't been able to be brought forward to this point. I think the question is REPA have used HS2 Ltd's 2012 cost and risk report, Annex A. That's what they're based on. Their case is that this evidence would appear to support that. Within this database, Rodney has found a whole series of things that have been a bit anomalous. As he's explained on this one, the fact that part of it's cut and cover. So I don't know, Rodney, do you want to come back on this point?

408. MR CRAIG: If I could just come back on one thing: on that table the total cost of tunnelling it said, including shafts and features, is £165 million. Well, the tender price was in fact £128 million, and I've written down somewhere – I'll have to find it – that about half to two thirds of the cost was in fact in the cut and cover. So that would show that in fact the figure quoted is a bit high. But I don't know whether we're going to be able to get anywhere because we've got to find someone who knows about the project. But the project did finish on time and on programme.

409. CHAIR: Okay. Well, thank you very much, Mr Craig.

410. MR CRAIG: Thank you.

411. CHAIR: We're going to adjourn for five minutes before your next witness. Order, order.

Sitting suspended

On resuming—

412. CHAIR: Order, order. Welcome, Mr Craig. Are you still in charge, Mr Griffiths?

413. MR GRIFFITHS: I guess so. You're in charge, Mr Chairman. Okay, if we move then to slide 54. I'm really going to hand over to Chris now. He's going to take us through his CV and take us through this part of the presentation.

414. MR BRIDGER: Just about good afternoon, gentlemen. My name is Chris Bridger. I spent 40 years as contractor, so I suppose I should apologise in advance,

working for – so I've a very – contractor's view on life, so apologies if I slip into the vernacular. So next slide, please. I'm going to be talking about four things: construction impact, which has been touched on already by the community spokespeople, excavation costs, the south portal and also the support at Hunts Green. So those are just the four topics I'm going to cover.

415. Okay, next slide, please. As a civil engineer I particularly like this slide because it basically shows all the elements of a major muck shifting project. It's actually HS1, and basically it demonstrates what the beast is. Major muck shifting is big, it's dirty, it's dusty, it's disruptive. It's all of those things. And HS2, I don't think, is going to be significantly different to that. The only difference, if you like, is that if you look at that picture in front of you and take the size of the vehicles and you do a rough measure across that cross-section, that cross-section is something less than 100 m. If you take the cross-section of HS2 from Mantle's Wood through to Leather Lane it's about 350 m on average. So if you look at that and think it's somewhat horrific, then multiply that by three and you get some idea of the scale of what HS2 is going to look like as it goes through the Chilterns. That includes the cuttings, the haul roads, the spoil heaps and the landscape bunding.

416. MR HENDRICK: Can I just ask, on that point, is there any way of doing it more sensitively in an area like we're discussing now?

417. MR BRIDGER: Yes, put it in a tunnel. Because fundamentally it's – the problems with the HS1 in terms of dust, in terms of noise and the like, nothing to do with HS1; it was a very good project, it was an exemplar project; good contractors, good designers, good client. It is the nature of the beast. Yes, you can water the haul roads a bit, yes you can put eight foot barriers up on either side. Over a distance of 350 m, in terms of earthworks, it will make very little difference. It is the nature of the beast. The only way you can mitigate it, if you like, is not to do it. And you would hope the earthworks would happen relatively quickly, but this is something the communities have got to live with for five to six years. One of the first activities is topsoil strip; one of the last activities is landscaping. So there are going to be big trucks trundling up and down this area for the best part of six years.

418. MR HENDRICK: Looking at that, I presume if it was done in an area that wasn't

an area of outstanding natural beauty, so there wasn't too much fuss about how much land either side you might take; in an area like we're talking about now, would there be an attempt to do it in a much narrower way, shift the spoil quicker, make it such that it's not taking such a big width of land on the track that you're trying to drive through, and manage in a way which is less disruptive and less damaging?

419. MR BRIDGER: In fairness this is no reflection on HS2. It's a very deep cut, so it's going to produce an awful lot of muck. So it's going to produce about two million cubic metres of muck, which has to be moved around. And what the exercise generally is you'll take it out of the cutting – you'll excavate it – transport it to a spoil heap, stockpile it in the spoil heap, some point in time you'll take it out of that spoil heap, transport it to either a landscape bund for screening purposes or taken off site. So all of that activity requires a significant area. And what I've done is I've taken the – on the HS2 drawing I've taken the gridlines and measured the width of that – those earthworks at every gridline and taken the average. And the average is 350 m. And in fairness, that's the sort of size that it's going to take. It is just the nature of the beast. As you quite rightly say, is there way of any – of mitigating it? And the answer is not really. Just stick it in a tunnel.

420. The next slide, actually, is about excavation costs. And as I said, the process is you dig it out, you transport it, you stick it in a stockpile, doze it into shape. You then re-excavate it, put it into a bund or you dispose of it off-site. So there are a number of activities associated with shifting a cubic metre of muck that you dig out of that cutting.

421. Now, we used a figure in our sums of 28 – I'm rounding this up; like I said, I'm a contractor, I just round everything up. So we used a figure of £28 per cubic metre. Now this is actually a figure that we got from HS2 in Appendix A 2012 of the Cost and Risk Report. So what we did was we looked at that and said, 'Okay, taking that rate, let's try and benchmark it against something to see if it looks fair and reasonable.' And the benchmarking tool we used was SPONS – I don't know who's familiar with it, but SPONS is an industry recognised booklet that aids estimation and benchmarking. So we had a look – and I'll come on to that in the next slide in a bit more detail, but you look at the HS2 figure, and you look at the SPONS figure, they look about right, and that's the figure that we used. And that is for excavation only. So that's only really the first part of that process.

422. When we look at the figures that have now been produced by HS2 that match up with the sort of total figure of the muck shifting, that £28 a cubic metre's gone to £16.3 a cubic metre, based on the volume of muck and the total figure. Now, I struggle to see how you can get from £28 a cubic metre for dig, to £16.3 a cubic metre to dig, transport, stockpile, re-excavate, transport, fill. If somebody can show me how to do it without divine intervention that would be great, but it just seems a significant anomaly.

423. If we flip to the next slide – and all it does really gives you a little bit more detail. What we're trying to do is be relatively conservative, because we don't want to be shot down if you like by putting forward unrealistic figures. So the SPONS data is the right hand column, and it says 5 m to 10 m, £28 a cube to excavate. 10 m to 15 m is £40 to excavate. So our figure of about £28 per cube looks about right. In fact it looks a little bit conservative, because quite a bit of our dig is actually in excess of 10 m deep. So perhaps we should be using a figure somewhere between 30 and 40, but we've used 28, which seems a reasonable benchmark figure. So that's where we're coming from, and as I said I struggle to see how we can get from £28 a cube in 2012 to £16.3 a cube in 2015, particularly –

424. SIR PETER BOTTOMLEY: In essence what you're discussing with the Committee is whether the HS2 figures for the cutting for the green tunnel at South Heath etc. are lower than they might be.

425. MR BRIDGER: Yes, that's exactly the point. Just another point, actually, because we're using 2011 figures. 2014 figures are 20%, so that makes the situation even worse.

426. SIR PETER BOTTOMLEY: Really?

427. MR BRIDGER: Yeah.

428. SIR PETER BOTTOMLEY: Is that because the economy has responded or it because we've had a Conservative government let inflation rip?

429. MR BRIDGER: I couldn't possibly comment, but that's the reality. 2011 is – 2014 to 2011, 20% increase in the excavation rate according to SPONS. And bear in mind, SPONS is based on real data, real projects, real tenders.

430. SIR PETER BOTTOMLEY: I think it's probably market conditions.

431. MR GRIFFITHS: To be fair to HS2 Ltd, it's a 2011 base, but it does suggest that there won't be enough –

432. MR BRIDGER: Okay, on the next one. This is really just about the south portal, because if you – let's say you put the railway in a tunnel, that means you don't do £2 million worth of earthworks which you push around the Chilterns, but what you would generate is 600,000 cube of material, which has to go somewhere else. And what we don't particularly want to do is solve a problem at our end, and give the problem to somebody else either upstream or downstream of the project. So if we go for the extended tunnel there's 600,000 cube of tunnel arising that has to be disposed of.

433. At the moment there are already two million cubic metres of tunnel arisings that are being used at the south portal to help mitigate the development by screening. Having looked at the profiles and the areas – and there's a slide to follow – I don't think it would be impossible to actually put another 30% of material in the same place. It's an area either side of the proposed alignment between the M25 and the A412. So I don't see any reason why that material could not be accommodated. I don't think it would particularly disadvantage anybody. It might improve the screening, and I don't think you would need to take that material off-site, which is what HS2 have actually priced in their cost comparison.

434. Okay, next slide, and thankfully my last slide. No, it isn't, beg your pardon. South portal south, that gives you a picture, actually, of where I'm talking about. So there you can see the M25 in the bottom left hand corner, the A412 in the sort of top right hand corner, the fill. And I think there is scope north of the trace, and north west of the trace, to actually put some additional material.

435. Okay, now the last slide. One of the other issues in terms of the cost plan is Hunts Green. Now, Hunts Green was going to be a, in inverted commas, a sustainable placement location. Which I think is another word for a permanent spoil heap. So that is now going to be a temporary spoil heap. So it's going to be something like 800,000 cube of material, or a million cube of material that's going to be stored at Hunts Green temporarily. And then it's either going to be moved up the trace or it's going to be moved off-site. Now, we don't know what proportion – I don't know what proportion

is going to stay – is going to move up the trace and what's going to go off-site. But I've seen an indication that perhaps more was going to go off-site than had been thought.

436. We don't think that the cost for the disposal of all of that material at Hunts Green has been included in the cost comparison. Well anyway, we can't find it. And surely if there's 800,000 to a million cube of material that's going to be disposed of arising from the rapid excavation that should be included in that cost comparison. That's it. That's me done.

437. CHAIR: Okay. You're one of the better witnesses. You know what you're talking about.

438. MR GRIFFITHS: Okay, if we go to the next slide, then. So where does the just over £16 come from? There's two way I can address this. I can take you through details since 26 June when we – at that time we had £13 per cubic metre. I could take you through the exchange of letters. It changed from £13 to £16 because HS2 Ltd discovered that they've got the wrong batter on the cuttings calculation, in spite of the fact that they'd previously given the figures to us correctly. Chris has really done a brilliant job. This in essence says there's a volume of material – we may or may not be agreed on the volume; I think we are agreed on the volume. We think you need to allow about £40 per cubic metre to dig it out, store it somewhere, move it somewhere, re-deposit. It could be a little bit less than that because not all that material is going into an engineering embankment, and it will be cheaper to put it into something else. We take the same quantity, we get the total figure that HS2 Ltd have given us and we get the £16. So that's the gap that we're dealing with that we haven't been able to understand or resolve.

439. So if we move forward. Now, I showed this slide at the start of our discussions on the cost. I'm going to take a little bit longer on it now just to summarise where we've got to. The bored tunnels we've done; you understand that. It creates a £79 million difference. The cuttings we've done; you understand that. It only creates a £20 million difference. It doesn't include Hunts Green, and it doesn't include the fact – as Chris explained – that if you look at SPONS the actual depth you could be a little bit more. So in our view it's quite a conservative estimate.

440. Now, going on down the next line item that we disagreed on was the extended

preliminaries. This is basically – it was put in by HS2 Ltd quite legitimately if REPA caused the – a one year extension in the project. One way or another that's not going to happen. The REPA tunnel would either be from both ends, or HS2 would get comfortable with doing it from one end. So we take that out. The indirect cost is a percentage of the costs above, so as it goes from a positive to a negative that comes out. The ECP VE goes the other way. HS2 Ltd have ambitions –

441. SIR PETER BOTTOMLEY: You and I may be an expert. ECP VE –

442. MR GRIFFITHS: You're going to have to be the expert, Sir Peter, because I know VE but I don't know ECP.

443. SIR PETER BOTTOMLEY: Give us VE then.

444. MR GRIFFTHS: VE is value engineering.

445. SIR PETER BOTTOMLEY: Thank you.

446. MR GRIFFITHS: Basically, it is another term –

447. SIR PETER BOTTOMLEY: This is a reduction on scheme costs.

448. MR GRIFFITHS: It's reduction on scheme costs, yeah, thank you. And that's how we get to the figure, apart from two other items. HS2 Ltd have allowed for buying land and property. They've put 32.7 in their figure. We believe, and hope, on behalf of the nation, that a bunch of that will be resold and hence we've given them just over a £21 million credit for that to get what we think would be an honest balance.

449. The other thing that we've done on bridges is that they've included for an under-bridge, and we haven't been able to find one. Basically on the drawings we don't think that's there, so we've deducted that from the figure as well to give the…

450. SIR PETER BOTTOMLEY: But that's not too important.

451. MR GRIFFITHS: It's not. It's 2.6, yeah. Obviously there's no Promoter cost savings in here; we'll come to that next, I think. Thank you.

452. MS WHARF: Yes. Perhaps if I can just pick up on the next slide, which is the non-Promoter costs, which you've heard. You've heard a lot about these yesterday and